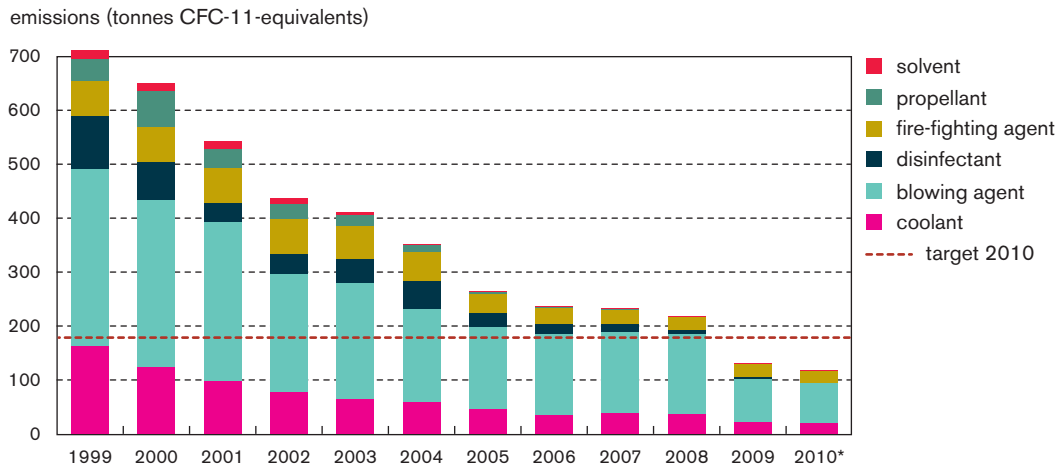
☺ Emission of ozone-depleting substances

DPSIR



* provisional figures

Source: VITO based on Econotec (2012)

Emissions continue to decrease

Between 1999 and 2010, the total emissions of ozone-depleting substances decreased by 83.4 %. Between 2008 and 2009, the emissions decreased significantly following a correction to the lifetime of the most recent generation refrigerators using CFC-11-eq as blowing agent. In 2010, almost 64 % of the emissions came from blowing agents that are mainly released by incorrect disposal, collection and processing of insulation material during the demolition of houses. It is technically difficult to remove the insulation material cleanly from a wall and to capture the gas released during processing, distil it and remove it for destruction. Emissions from blowing agents will, therefore, continue for some years. In 2010, fire-fighting agents still accounted for 20 % of the emissions. Coolants used in air-conditioning installations, refrigerators and freezers were responsible for 16 % of the emissions.

Target 2010 reached

The MINA plan 3+ (2008-2010) aimed to reduce the emissions by 2010 by at least 74.5 % with respect to the emissions in 1999. In concrete terms, the emissions were to be reduced to 181.2 tonnes CFC-11-eq by 2010. The target was achieved. Already in 2009 and 2010, the emissions of ozone-depleting substances were 28 % and 35 % below the target. The MINA plan 4 (2011-2015) does not specify a new target. Especially European policy will now determine the further reduction of these emissions and is very ambitious in its approach. European Regulation (EC) 1005/2009 stipulates the phasing-out schemes and prohibitions regarding the production, placing on the market and use of ozone-depleting substances. The goal of the Montreal Protocol is to limit and ultimately completely stop the use of ozone-depleting substances.

emissions (tonnes CFC-11-eq)	coolant	blowing agent	disinfectant	fire-fighting agent	propellant	solvent	*total*
1999	162.6	328.0	98.2	65.5	40.9	15.5	*710.7*
2008	36.6	148.7	6.2	25.2	0.9	1.7	*219.3*
2009	21.9	79.5	3.4	24.3	0.5	0.4	*129.9*
2010*	18.7	75.3	0.0	23.4	0.2	0.4	*118.0*

? Thickness of the ozone layer above Uccle

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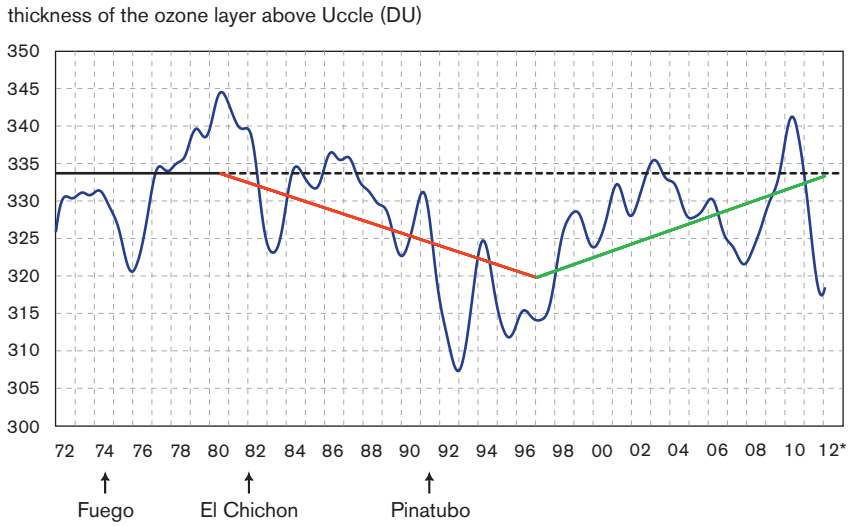

* provisional figures
The arrows indicate the dates of volcanic eruptions (from left to right in Guatemala, in Mexico and in the Philippines) that ejected dust into the stratosphere. Depending on the location and time of the eruption, this had consequences for the thickness of the ozone layer in the longer term.

Source: KMI

Signs of recovery of the ozone layer, certainty only after several decades

The advancing annual average of the thickness of the ozone layer above Uccle (blue line) can be split into two periods. Between 1980 and 1997, the thickness of the ozone layer decreased by 0.26 % per annum (red line). During the period 1997-2011, the thickness increased by an average 0.28 % per annum (green line). Satellite observations point in the direction of a recovery. However, in view of the large uncertainties and large annual fluctuations, it is still too early to interpret this as a definitive recovery.

The thickness of the ozone layer is influenced in a complex manner by human activities and natural phenomena. The production of ozone-depleting substances by humans is decreasing thanks to the measures taken in the Montreal Protocol. The effect on the ozone layer will, however, only be observable in the long-term. Furthermore, scientific research has shown that there are also various interactions with climate change. Among other things, a temperature increase in the troposphere is accompanied by a temperature drop in the stratosphere, which would increase the efficiency of the ozone-depleting substances. As a result, the recovery of the ozone layer (even with decreasing chlorine and bromine concentrations) could be slowed down further. Other natural phenomena, such as volcano eruptions and changes in the general circulation in the stratosphere, can also affect the condition of the ozone layer.